

What we know

- How to use the quadratic formula to solve for the roots of a quadratic equation.
- that any quadratic can have one, two or zero roots.
- that you can NOT take the square root of a negative number

What we will be learning

- What part of the quadratic formula will help to indicate how many roots there are.
- The DISCRIMINANT

Work to help you remember

Pg. 349 # 3 → 5ace, 9ac, 14, 15, 10
Pg. 357 # 2, 3, 6, 8, 9, 10, 14

Feb 22-11:43 AM

(6.5) Interpreting Quadratic Equation Roots**The Discriminant**

Use the graphing calculator to help you complete the following chart:

quadratic function	sketch	number of roots (0, 1, 2)	value of $b^2 - 4ac$	nature of roots
$3x^2 + 5x - 2 = 0$				
$x^2 - 8x + 16 = 0$				
$2x^2 + x + 5 = 0$				
$-x^2 - 7x - 16 = 0$				
$-3x^2 - 8x + 1 = 0$				

May 21-6:20 PM

Summary:**Discriminant is:** $D = b^2 - 4ac$ Roots can be **ONE** of three types:

Nature of the roots	Value of the <u>discriminant</u>	Graphical representation
no real roots (imaginary)	-ve	
real and distinct (2 different roots)	+ve	
real and equal (1 root)	0	

May 21-6:24 PM

1) Where does the formula for the discriminant come from?

2) Find the discriminant of $x^2 - 8x + 36 = 0$

What is the nature of the roots?

$$\begin{aligned}
 a &= 1 & b^2 - 4ac \\
 b &= -8 & (-8)^2 - 4(1)(36) \\
 c &= +36 & 64 - 144 \\
 & & -80
 \end{aligned}$$

-ve discriminant means
no real roots (2 imaginary roots)

May 21-8:35 PM

p. 357 q2

$$h = 15 + 22t - 5t^2$$

$$h = -5t^2 + 22t + 15$$

When does it reach 10m

$$10 = -5t^2 + 22t + 15$$

$$0 = -5t^2 + 22t + 15 - 10$$

$$0 = -5t^2 + 22t + 5$$

$$0 = -(5t^2 - 22t - 5)$$

$$a = 5$$

$$b = -22$$

$$c = -5$$

Quad Formula

-0.2 and 4.6

At 4.6 sec the rocket reaches
the window height of 10m.

Dec 1-10:40 AM

May 15-12:09 PM